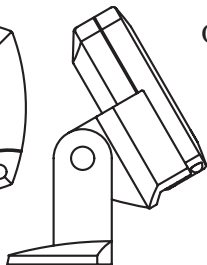




Operation Manual



V500

DIGITAL Vehicle Compass



TABLE OF CONTENTS

CONGRATULATIONS	1
V500 Features	1-2
DISPLAY AND BUTTONS.....	3-4
STEP 1 - INSTALLING THE BATTERIES	5
STEP 2- MOUNTING THE V500.....	6
Mounting Guidelines	6
Mounting the V500.....	6-7
STEP 3 - CALIBRATING THE V500.....	8-9
When to Calibrate	8
Calibration Guidelines.....	8
Calibrating the V500	8-9

TABLE OF CONTENTS

STEP 4 - SETTING THE CLOCK.....	10
BACKLIGHT INFORMATION AND PROGRAMMING.....	11
Backlight Auto Shut-off	11
Changing the Auto Shut-off Value.....	11
CHANGING THE BATTERIES	12-13
FREQUENTLY ASKED QUESTIONS	14-16
SERVICE AND REPLACEMENT	17-18
WARRANTY INFORMATION	19-20

CONGRATULATIONS!

You have acquired one of the most sophisticated compasses available for use in a vehicle. The V500 incorporates patented magnetic sensor technology that was developed for the United States Military to give you the most accurate electronic compass headings. The V500 offers advanced features such as an extra bright backlight display for night driving as well as a built-in digital clock. The compass unit can also be easily removed from its holding bracket to be used outside the vehicle as a clock or to prevent theft.

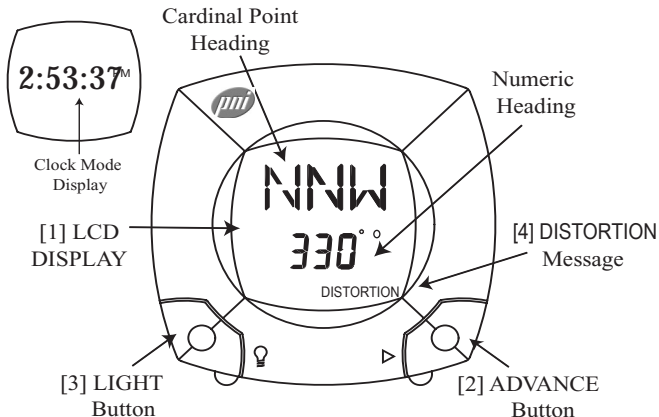
V500 Features:

- **Works in Any Vehicle:** accurate in all types of vehicles - cars, trucks, SUVs, or RVs.
- **Removable Compass Unit:** compass easily slides off from its holding bracket to be used outside the vehicle as a clock or to prevent theft.
- **Adjustable Holding Bracket:** easily mounts to any windshield with heavy-duty suction cups (included).
- **Easy to Read Display:** compass heading is displayed with 16 cardinal points (N, NNE, NE, etc.) and 5° numeric digits (345°, 350°, etc.).

V500 FEATURES

- **Electronic Calibration:** no manual adjustments are needed, just press a button and drive your vehicle in two circles. Calibration doesn't have to be repeated until the batteries are removed or the compass is mounted elsewhere.
- **On-Screen Help:** short instructions appear automatically to make programming and button handling easier (ex. "Hold to set", "Distortion", etc.).
- **Bright Backlight:** illuminates the LCD for easy viewing day or night.
- **Digital Clock:** displays in 12-hour or 24-hour time format.
- **"Smart" Auto Shut-Off:** turns off automatically to save battery power when the vehicle is parked and no magnetic field change is detected for ten minutes.
- **Magnetic Distortion Message:** alerts you when magnetic interference from outside sources is affecting the accuracy of the compass.
- **Low Power Requirements:** operates on 2 "AAA" batteries (included) for over 200 hours, depending on back-light usage.
- **Wide Temperature Range:** -14°F to 140°F operating temperature; -40°F to 160°F storage temperature.
- **Accuracy** of +/- 5° and resolution of 5°.

DISPLAY AND BUTTONS



DISPLAY AND BUTTONS

[1] LCD Display:

The V500 has 2 modes:

1. Compass Heading Mode - displayed in 16 Cardinal Points Headings (N, NNW, ENE, E, etc.) and in 5° numeric digits (325°, 350°, etc.) with a resolution of 5°.
2. Clock Mode - displayed in a 12 or 24-hour format

[2] ADVANCE Button:

Used to turn the unit on, to step through the various compass modes, to toggle between various options in programming mode, and to begin and end calibration.

[3] LIGHT Button:

Used to turn the backlight on or off, to enter backlight programming, and to select an option or value in programming mode.

[4] "DISTORTION" Message:

The V500 detects when outside magnetic interference is compromising compass accuracy by displaying the word "DISTORTION" on the LCD. Distortion occurs when there has been a significant change in the surrounding magnetic fields, such as when you are driving underneath an overpass or over a bridge.

STEP 1 - INSTALLING THE BATTERIES

The V500 uses two “AAA” size batteries (provided).

Installing the Batteries:

1. Remove the compass from its holding bracket and place it on a solid surface with the LCD facing down and the back of the compass facing up.
2. Slide open the battery cover on the back of the compass housing.
3. Install the two batteries, noting the polarity as shown inside the battery compartment. Replace battery cover.

Once the batteries are inserted, the V500 will go through a self-test pattern until the clock starts.

Notes:

- If nothing happens, or if the display becomes “stuck” with characters, remove the batteries, wait approximately 1 minute, and then reinsert them. Make sure the batteries are positioned correctly.
- If the batteries are removed or replaced, you must recalibrate the compass and set the clock (see pages 8-10).
- The V500 has an auto shut off power. When you have parked your vehicle and no magnetic field change has been detected for approximately 10 minutes, the compass automatically times out to clock mode. To turn the power back on, press any button.

STEP 2 - MOUNTING THE V500

Mounting Guidelines:

- The V500 should be mounted on the windshield.
- Choose a place on the windshield that will not obstruct the view of the driver and is within reach so the buttons can be easily pushed.
- For maximum accuracy, the V500 should be mounted at least 5 inches away from strong stereo speakers.
- Once installed, the face of the compass must be pointing towards the rear of the vehicle. The compass can be adjusted vertically, up to $\pm 20^\circ$ from road level and still remain accu-

rate. If it is adjusted more than 20° , the heading information may not be accurate.

Mounting the V500:

1. Install the suction cups (included) onto the base of the holding bracket by fitting them into their holes.
2. Adjust the angle of the holding bracket so that the face of the compass is pointing towards the rear of the vehicle. Loosen the screw on the holding bracket stem by a quarter turn. Make your up and down adjustments, then tighten the screw.

STEP 2 - MOUNTING THE V500

3. Press the holding bracket base firmly against the windshield, until the suction cups securely take hold (clean surface of windshield and suction cups, if necessary).
4. Readjust the angle of the holding bracket, if necessary.

Feature: The compass easily slides out of its holding bracket without having to remove the bracket mechanism. This is useful if you want to use the compass outside of the vehicle as a clock or to avoid theft. Removing the compass without disrupting

the bracket mechanism eliminates the need for recalibration, since the unit will be repositioned in its holding bracket the same way as when originally calibrated.

You are now ready to calibrate your compass.

STEP 3 - CALIBRATING THE V500

Calibration allows the V500 to separate the earth's field from the magnetic fields generated by your vehicle, and therefore provides accurate heading information.

When to Calibrate:

- When the compass is used for the first time in a vehicle.
- When the compass is used in a different location than where previously calibrated.
- When the magnetic "DISTORTION" message is continuously displayed.
- When the batteries are removed or replaced.

Calibration Guidelines:

Before you begin calibration, the V500 must be mounted on the windshield in the location where it will be used in the vehicle.

Calibrating the V500:

1. Press the ADVANCE button until the compass heading is displayed or the "CAL" message flashes. "CAL" will flash if there is no calibration currently stored.
2. If the compass heading is displayed, press and hold for 2 seconds both the ADVANCE and LIGHT buttons until the "CAL" message flashes.

STEP 3 - CALIBRATING THE V500

3. Press the ADVANCE button - The “WAIT” message will display for a second, the backlight will turn on and off, and then the “TURN TWICE” message will flash.
4. Turn your vehicle in two circles (see Note below).
5. Press the ADVANCE button -- Calibration is now complete and the compass heading should be displayed.

the circles does not matter. The circles do not need to be perfect circles, but must be completed in the same direction.

Feature: Pressing the LIGHT button during programming cancels the process without disrupting your previous calibration settings. However, if no previous calibration is stored, pressing the LIGHT will not cancel calibration.

Note: Calibration should be performed on a level surface. The size of the circles or the direction your vehicle is pointing when beginning or ending

STEP 4 - SETTING THE CLOCK

The V500 displays time in either military format or standard time format (24-hour clock format or 12-hour clock format). The default time format is standard time.

Setting the clock:

1. Press and release the ADVANCE button until the clock is displayed (you must be in clock mode in order to set the clock).
2. Press and hold for 2 seconds the ADVANCE button. The default number "12" will flash.
3. Press the ADVANCE button to toggle between the 12 and 24 hour formats.
4. Press the LIGHT button to select the hour format you desire. The clock

appears with the hour digits flashing.

5. Press or hold the ADVANCE button to change the hour digits.
6. Press the LIGHT button to select the desired hour.
7. Repeat the above 2 steps to store the minutes, and to set the seconds to "00." The digit(s) flashing is the digit being changed.

The 2 steps below are required only if the 12-hour format is selected:

8. Press the ADVANCE button to toggle between A or P (AM or PM)
9. Press the LIGHT button to select A or P (AM or PM)

BACKLIGHT INFORMATION AND PROGRAMMING

The V500 uses an electro-luminescent backlight to illuminate the display, making it visible at night. Pressing the LIGHT button turns the backlight on or off. The backlight has a programmable auto shut-off feature, which shuts the backlight off after it has been on for a specified period of time.

Backlight Auto Shut-off:

The V500 has a programmable auto shut-off for the backlight. The default auto shut-off value is 10 seconds, but 30 seconds can also be selected. Auto shut-off can also be disabled completely by selecting 00 seconds. This means the backlight will stay on con-

tinuously until the LIGHT button is pressed again, or when the vehicle is parked and no magnetic field change is detected for ten minutes.

Changing the Auto Shut-Off Value:

1. Press and hold the LIGHT button for 2 seconds and the default value of "10" (or the last selected value) will appear and flash.
2. Press the ADVANCE button to select the desired value of 10, 30, or 00 seconds.
3. Press and hold the LIGHT button for 2 seconds to select the value. The display returns to compass or clock.

CHANGING THE BATTERIES

The V500 uses two “AAA” size batteries.

It is time to change the batteries in the V500 when the display flickers or is dim, when you turn the backlight on and the display goes blank or when the unit will no longer turn on.

Changing the Batteries:

1. Remove the compass from its holding bracket. Place it on a solid surface with the LCD facing down and the back of the compass facing up.
2. Slide open the battery cover on the back of the compass housing. The batteries are stored underneath the

cover. Remove the old batteries and discard appropriately.

3. Replace with two new “AAA” batteries, noting the polarity as shown inside the battery compartment. Replace the battery cover.

Once new batteries are inserted, the V500 will go through a self-test pattern until the clock starts.

If nothing happens, or if the display becomes “stuck” with certain characters, remove the batteries, wait approximately 1 minute, and then reinsert them. Make sure the batteries are positioned correctly.

CHANGING THE BATTERIES

Note: Since the batteries have been removed, it is necessary to recalibrate the compass and reset the clock (see pages 8, 9 and 10).

FREQUENTLY ASKED QUESTIONS

How does the V500 work?

The V500 uses a patented magnetic sensor technology that was developed by PNI Corporation for the US Military. This technology is called Magneto-Inductive and is the largest advance in compass technology since the fluxgate was invented 60 years ago. The earth generates a magnetic field, and through a mathematical calculation, compass heading is determined. The Magneto-Inductive technology is able to electronically sense the difference in the earth's field from your vehicle's magnetic field. The V500's microprocessor electronically subtracts your vehicle's mag-

netic fields, displaying highly accurate compass readings. Magneto-Inductive sensor technology has many advantages over other technologies including better performance, consuming less power and being less expensive. These advantages have made Magneto-Inductive sensor technology the choice for many high profile compass applications including GM, Ford, and Chrysler automobiles, Polaris jet skis, Bayliner boats and Timex watches.

Where can the V500 be used?

The V500 can be used in any type of vehicle including cars, trucks, vans, SUVs, and RVs.

FREQUENTLY ASKED QUESTIONS

How do I read the display?

The V500 displays direction in 2 different formats (1) cardinal points (N, NNE, NE, ENE, E, etc.) and (2) numeric digits (325°, 330°, etc.) The 16 cardinal points of a compass (N, NW, NE, NNE, NNW, E, ENE, ESE, S, SW, SE, SSE, SSW, W, WSW, WNW) give you a general sense of direction. The numeric digits show your exact direction down to the nearest 5 degrees.

What is calibration and why is it necessary?

Calibration is the process whereby the V500 separates the earth's magnetic field from externally generated mag-

netic fields such as those generated by a vehicle's steel body or electronics. Without calibration, the V500 thinks the entire magnetic field it is reading is from the earth and therefore displays inaccurate compass readings.

When do I need to calibrate the V500?

The V500 needs to be calibrated when it being used for the first time, when it is being used in an environment with a different magnetic field or when the batteries are removed or replaced. Using the V500 in a different environment includes moving it to a new position in the same vehicle, installing it in a different vehicle, or when there

FREQUENTLY ASKED QUESTIONS

has been a change to your vehicle such as installation of a new stereo.

What happens when the batteries are removed?

Removing the batteries from the V500 erases all the information that was stored in memory including the time, as well as calibration information. After removing the batteries, the V500 must be recalibrated.

What is magnetic distortion?

Many things generate external magnetic fields that can cause a compass to be inaccurate, such as metal and electronics. Unlike all other compasses, the

V500 senses when there has been a significant change in magnetic fields and displays the “DISTORTION” message. This may occur when driving over a bridge, under an overpass, over railroad track or within close proximity to something with a strong magnetic field. Once the vehicle has moved away from the source of interference, the V500 will be accurate again. If the “DISTORTION” message is continuously displayed, it is usually a sign that there has been a significant change in magnetic fields and recalibration is necessary.

SERVICE AND REPLACEMENT

For the fastest service, contact or return your V500 to the place of purchase.

If you wish to return the unit for replacement or repair to PNI, please follow the following procedures:

1. Obtain a Return Merchandise Authorization (RMA) number by contacting PNI:
 - *By Phone:*
1-888-422-6672 (Toll-Free within the US only) or at 707-566-2260
 - *By Fax:*
707-566-2261
 - *By E-mail:*
sales@pnicorp.com

2. Provide a proof of purchase, such as a mechanical reproduction or carbon copy of a sales receipt. If you send your original receipt, it cannot be returned. Proof-of-purchase must show printed date of purchase, model number, and place of purchase.

Once you have acquired an RMA number, pack the unit securely to prevent damage in transit. If possible, use the original packing material and box. Be sure to send the entire product.

3. Ship prepaid and insured by way of a traceable carrier: such as United Parcel Service (UPS), Roadway Parcel Service (RPS), or First Class

SERVICE AND REPLACEMENT

Mail to avoid loss in transit.

4. With the issued RMA number written on the outside of your package, send your proof-of-purchase and description of the problem to:

PNI Corporation
5464 Skylane Boulevard, Suite A
Santa Rosa, CA 95403-1084

Type or print your name and address where the replacement should be delivered. After receipt of your documents and unit, a replacement unit will be sent to you. Please allow 2-3 weeks from receipt of your returned product to delivery of your replacement.

WARRANTY INFORMATION

LIMITED WARRANTY

- A) PNI Corporation warrants that for one (1) year after purchase subject to proof of purchase reasonably acceptable to PNI, the Vehicle Compass, model V500 (“UNIT”) will be free of manufacturing defects and shipping damages. PNI does NOT, warrant that the UNIT will meet any particular requirements of the customer or that the use of the UNIT will be uninterrupted or error free. As customer’s sole remedy and PNI’S entire liability for breach of this limited warranty, PNI will provide a replacement UNIT to customer. This limited warranty shall not apply in the event of abuse, mis-use, or mishandling of the UNIT.
- B) EXCEPT AS PROVIDED ABOVE IN SUBSECTION a), PNI MAKES NO WARRANTIES TO CUSTOMER WITH RESPECT TO THE UNIT AND PNI EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL, IMPLIED, OR STATUTORY, INCLUDING,

WARRANTY INFORMATION

WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Warranties vary according to state law. Consult your particular state's law.

LIMITED LIABILITY

PNI's cumulative liability to customers for all claims of any kind resulting from PNI's role to and/or customer's or any third party's eye of the UNIT PNI SHALL NOT BE LIABLE FOR ANY SPECIAL, GENERAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, HOWEVER CAUSED, WHETHER FOR BREACH OF WARRANTY, CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE.

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